LESSON 10-4

Coordinate Proof Using Distance with Quadrilaterals

Practice and Problem Solving: A/B

1. The vertices of a quadrilateral are given by the coordinates $W(3, 5)$, $X(5, 0)$, $Y(-3, -4)$, and $Z(-5, 1)$. Is the quadrilateral a parallelogram? a trapezoid? Explain your reasoning.

2. Two friends see a drawing of quadrilateral *PQRS* with vertices *P*(0, 2), *Q*(3, −4), *R*(1, −5), and *S*(−2, 1). Joe says the quadrilateral is a parallelogram but not a rectangle. Carl says the quadrilateral is a rectangle. Who is correct? Show the work that supports your answer.

For Problems 3-6, consider quadrilateral ABCD with vertices A(2,4), B(4,-1), C(-1,-3), and D(-3,2).

3. Show that ABCD is a parallelogram. Include the work that leads to your conclusion.

4. Show that ABCD is a rectangle. Include the work that leads to your conclusion.

5. Show that ABCD is a rhombus. Include the work that leads to your conclusion.

6. Explain why ABCD must be a square.

For Problems 7-10, consider quadrilateral WXYZ with vertices W(-2,5), X(5,5), Y(5,0), and Z(-2,0).

7. Are the diagonals congruent? Include the work that leads to your conclusion.

8. Are the diagonals perpendicular? Include the work that leads to your conclusion.

9. Do the diagonals bisect each other? Include the work that leads to your conclusion.

10. Is WXYZ a square? Explain your reasoning.

Algebra **Use the diagonals to determine whether a parallelogram with the given vertices is a rectangle, rhombus, or square. Give all the names that apply.**

11. $A(-10, 4), B(-2, 10), C(4, 2), D(-4, -4)$

12. $J(-9, -7), K(-4, -2), L(3, -3), M(-2, -8)$

Analyze Relationships **The coordinates of three vertices of parallelogram *ABCD* are given. Find the coordinates of the fourth point so that the given type of figure is formed.**

13. $A(4, -2), B(-5, -2), D(4, 4)$, rectangle

14. $A(-5, 5), B(0, 0), C(7, 1)$, rhombus

15. $A(0, 2), B(4, -2), C(0, -6)$, square

16. $A(2, 1), B(-1, 5), C(-5, 2)$, square